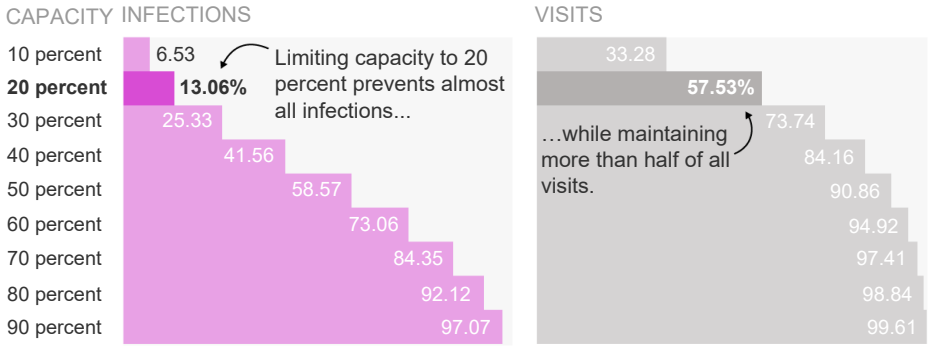
EXHIBIT EEE

Opinion

The Magic Number for Reducing Infections and Keeping Businesses Open

By Yaryna Serkez Dec. 16, 2020



Note: Simulation based on data in the ten biggest metro areas, March 1–May 2, 2020. ▪ Source: "Mobility network models of COVID-19 explain inequities and inform reopening" by Chang et al.

While many restaurants, bars and gyms shut down during the pandemic,

others have continued operating with limited capacity. New research shows this sacrifice could be effective at curbing transmissions — and density caps may offer one way to keep the economy humming along during the worst of the winter wave.

Data from early in the pandemic reveals there's a "sweet spot" where infections can be reduced while keeping business steady. That magic number: around 20 percent. If indoor capacity in public spaces like restaurants, gyms, hotels and grocery stores was reduced to just 20 percent, we could prevent 87 percent of new infections. Meanwhile, these businesses would lose just 42 percent of their visits, on average, according to research from scientists at Stanford and Northwestern.

The findings bolster capacity limits as an effective coronavirus strategy, keeping businesses alive while limiting infections. Researchers found they are so effective because they reduce the risks during peak hours, encouraging patrons to stay home or visit at less crowded times, according to Serina Chang, a PhD student at Stanford and co-author of the study. "Capacity caps disproportionately target those risky locations in their busiest hours. This is why we see the promising trade-off curve, where a smaller reduction in visits can result in a large reduction in infections," she said.

The finding should influence how cities respond to the pandemic now. Rather than citywide shutdowns and stay-at-home orders, stricter density caps paired with other measures could curb the coronavirus while allowing the economy to limp along.

The model showed that stricter capacity limits in all ten metro areas would significantly cut the number of infections while maintaining more than half of visits.

10%20%30%40%50%60%70%80%90%New YorkInfectionsVisitsCAP.13%57%
10%20%30%40%50%60%70%80%90%Los AngelesInfectionsVisitsCAP.12%56%
10%20%30%40%50%60%70%80%90%ChicagoInfectionsVisitsCAP.21%58%
10%20%30%40%50%60%70%80%90%HoustonInfectionsVisitsCAP.6%58%
10%20%30%40%50%60%70%80%90%PhiladelphiaInfectionsVisitsCAP.20%58%
10%20%30%40%50%60%70%80%90%DallasInfectionsVisitsCAP.9%59%
10%20%30%40%50%60%70%80%90%San FranciscoInfectionsVisitsCAP.8%56%
10%20%30%40%50%60%70%80%90%Washington, D.C.InfectionsVisitsCAP.26%58%
10%20%30%40%50%60%70%80%90%AtlantaInfectionsVisitsCAP.8%59%
10%20%30%40%50%60%70%80%90%MiamiInfectionsVisitsCAP.8%57%

Note: Simulation based on data March 1–May 2, 2020. ▪ Source: "Mobility network models of COVID-19 explain inequities and inform reopening" by Chang et al.

These findings are consistent with earlier study by researchers at the University of Chicago and Northwestern University, which showed that reducing economic activity in hotspot neighborhoods in New York while keeping businesses open in other parts of the city could prevent the coronavirus from spreading with a "lower economic cost than uniform citywide closure policies."

"There is data that shows that capacity restrictions can be beneficial in decreasing transmission risks at certain places along with other types of measures as well," said Amesh Adalja, senior scholar at the Johns Hopkins Center for Health Security. "In general, I'm in favor of capacity restrictions when the alternative is to have just zero capacity and not allowing businesses to operate."

Capacity limits are not a new idea. They were among the first recommendations from the Centers for Disease Control and Prevention. Many cities have versions in place — including New York, which limits places like restaurants and retail stores to 25 and 50 percent capacity respectively. However, their severity matters a lot. Stanford's study showed that reducing occupancy by half prevents only 41 percent of new cases, while restricting occupancy to just 20 percent would more than double the number of prevented cases.

No matter how strict, however, occupancy limits won't prevent all transmissions. And they could work for some cities more than others. In places with greater underlying immunity and higher share of people wearing masks and social distancing, density caps are more likely to succeed. But they won't be as effective if the area's infections are rapidly worsening or other mechanisms like private gatherings are driving the spread.

"If your goal is to get to zero cases as fast as possible, or to keep it going down, or you have poor mask compliance and not a lot of underlying immunity," density caps might not be enough, said Justin Lessler, an associate professor of epidemiology at the Johns Hopkins Bloomberg School of Public Health. That could mean Southern states like Georgia,

which have flouted mask-wearing laws, might not benefit as much from density caps.

Protecting the most vulnerable

While the strategy could help the economy, the biggest impact could be reducing infections among lower-income Americans — a group disproportionately affected by the pandemic both physically and economically. Stanford's study found that occupancy caps would help mitigate these inequalities.

The virus ravaged disadvantaged communities in cities like New York partly because lower-income people visited more densely packed businesses and stayed there for longer, according to the study. A tiny, crowded bodega is different from a spacious high-end supermarket. People in lower-income neighborhoods also traveled more, commuting to work or leaving home more often for groceries and other essentials, the researchers found.

David Rothenberg for The New York Times

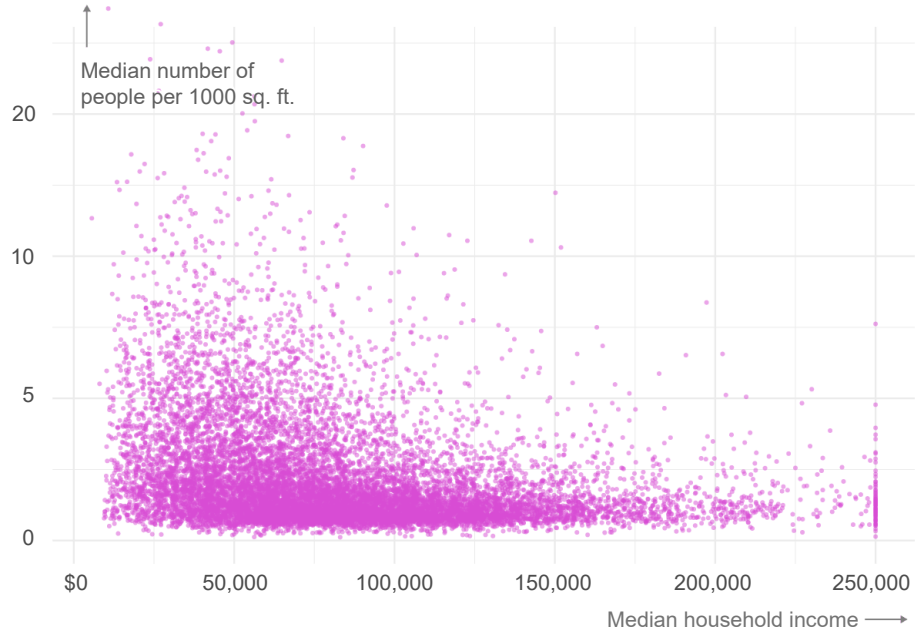
Grocery store in Corona, Queens. Annual median family income $63,324.

David Rothenberg for The New York Times

An employee offers hand sanitizer to a shopper as they enter the Trader Joe's in Brooklyn Heights. Annual median family income $201,292.

"The average grocery store visited by lower-income individuals had 59 percent more hourly visitors per square foot, and their visitors stayed 17 percent longer on average," the researchers write.

Median crowdedness of New York grocery stores visits, by census block group and income

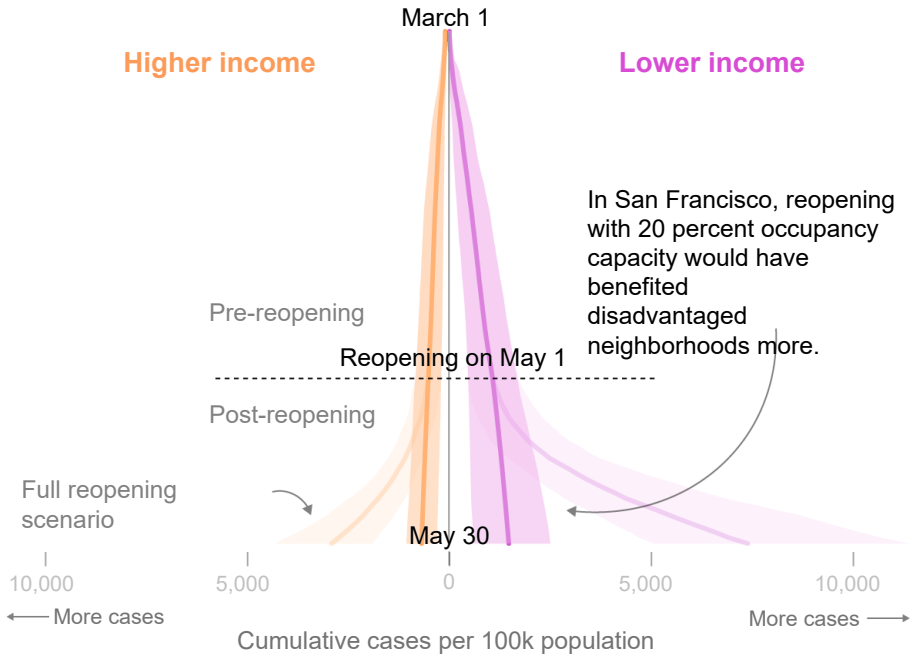


Note: Based on data March 1–May 2, 2020. ▪ Source: "Mobility network models of COVID-19 explain inequities and inform reopening" by Chang et al.

"The reason why there are disparities is not only pre-existing conditions and unequal access to healthcare, which are important, but also actual mobility patterns," said David Grusky, co-author of the study and director of the Stanford Center on Poverty and Inequality. "Because low-income groups are more likely to be essential workers, they tend to be more exposed to infection and work in places that are denser and have longer dwell times."

Density caps can't eliminate inequality. But they can counteract its effect on the pandemic, preventing dangerous high-density interactions that drive disease spread among lower-income populations.

Cumulative new cases under 20 percent reopening scenario in San Francisco, by income group



See how different occupancy caps affect Covid-19 spread

Maximum occupancy at **20%**

80K604020020406080Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30New YorkLowerincomeLowerincomeHigherincomeHigherincomeFull reopeningFull reopening
40K2002040Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30Los Angeles
40K2002040Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30Chicago
15K105051015Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30Houston
60K40200204060Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30Philadelphia
20K1001020Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30Dallas
10K50510Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30San Francisco
40K2002040Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30Washington, D.C.
40K302010010203040Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30Atlanta
40K2002040Cumulative cases per 100k populationMarch 1March 1Reopening on May 1Reopening on May 1May 30May 30Miami

Note: Lower and higher income groups represent bottom and top income deciles respectively. ▪ Source: “Mobility network models of COVID-19 explain inequities and inform reopening” by Chang et al.

The study has its limitations — it doesn’t include all types of businesses, does not cover all populations, and does not account for all aspects of disease transmission. And density caps are, by no means, a panacea. The economic downturn should be addressed with broader federal stimulus packages and support for small businesses. Inequality should be tackled with improved paid leave policies, free widespread testing and accessible PPE. But given how simple and effective stricter density caps could be, many American cities should consider them this winter.

“We want to choose from among the plans that not only reduce the overall rates but decrease disparities and maintain the economy,” said Mr. Grusky.

Yaryna Serkez (@iarynam) is a writer and graphics editor for Opinion.

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